

No new matter within the meaning of § 132 has been added by any of the amendments.

Applicants further note that the hydrotalcite of U.S. Patent No. 4,351,814 ("Miyata et al.") cited in the obviousness rejection is not porous and is instead fibrous. Therefore, the BET specific surface area of the hydrotalcite of Miyata et al. is very small and is probably about 30 m²/g or less. Applicants proffer a § 1.132 Declaration to such effect and will submit the Declaration upon completion.

Accordingly, Applicants respectfully request the Examiner to enter the indicated amendments of Appendix A and allow all presently pending claims.

1. Rejection of Claims 19-25
under 35 U.S.C. § 103(a)

The Office Action rejects claims 19-25 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,351,814 ("Miyata et al."). The Office Action states:

Miyata teaches in columns 2, 4 and 5 a hydrotalcite with SiO₃ anion. A sulfate ion can also be chosen. Forming the claimed material from the anions disclosed is an obvious matter of optimization of teachings; In re Boesch 205 USPQ 215. The properties not reported are deemed possessed due to the similarity of the size and composition to what

is presented disclosed.

Applicants respectfully traverse this rejection because the Office Action fails to establish a *prima facie* case of obviousness. Miyata et al. fails to teach or provide any motivation or suggestion to one of ordinary skill in the art to make a porous hydrotalcite crystal having a BET specific surface area of 50 to 400 m²/g and having the required component of A₁ⁿ⁻ being a silicic acid ion (HSi₂O₅⁻).

Instead, Miyata et al. relates to a fibrous hydrotalcite, which is not porous like the claimed invention, and has a very small BET specific surface area of about 30 m²/g or less. It would have been unobvious to make the claimed limitations because making a BET specific surface area of 50 to 400 m²/g and A₁ⁿ⁻ being a silicic acid ion (HSi₂O₅⁻) is not mere optimization of results-effective variables. Only when the claimed invention is practiced does one arrive at a porous hydrotalcite crystal having excellent absorptivity resolution, water resistance and light resistance as a dye fix agent for water-color ink. See the specification at pages 15, 19, 24 and 26.

The rule of law

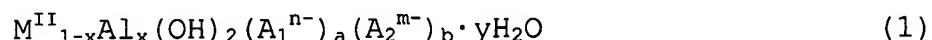
The Federal Circuit held that a *prima facie* case of

obviousness must establish: (1) some suggestion or motivation to modify the references; (2) a reasonable expectation of success; and (3) that the prior art references teach or suggest all claim limitations. Amgen, Inc. v. Chugai Pharm. Co., 18 U.S.P.Q.2d 1016, 1023 (Fed. Cir. 1991); In re Fine, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); In re Wilson, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970).

However, even if a *prima facie* case of obviousness has been established, secondary considerations such as commercial success, long felt but unsolved need, failure of others, and unexpected results may nevertheless give rise to a patentable invention. Graham v. John Deere Co., 148 U.S.P.Q. 459 (1966). For example, evidence such as superiority in a property the compound shares with the prior art can rebut a *prima facie* case of obviousness. See In re Chupp, 2 U.S.P.Q.2d 1437, 1439 (Fed. Cir. 1987).

Amended claim 1

In the present application, amended independent claim 1 recites a porous hydrotalcite compound represented by the following formula (1):



wherein M^{II} is Mg^{2+} or/and Zn^{2+} ,

A_1^{n-} is a silicic acid ion ($HSi_2O_5^-$) and a sulfuric

acid ion (SO_4^{2-}), or a silicic acid ion (HSi_2O_5^-),

A_2^{m-} is an anion selected from the group consisting of CO_3^{2-} , NO_3^- , Cl^- and OH^- ,

x and y satisfy $0.50 < x < 0.80$ and $0 < y < 2$, and

a and b satisfy $0.50 < na + mb < 0.80$, and

having a BET specific surface area of 50 to 400 m^2/g .

Miyata et al. does not render obvious the claimed invention

Miyata et al. fails to teach or suggest a hydrotalcite containing HSi_2O_5^- as an anion and a BET specific surface area of 50 to 400 m^2/g . Instead, Miyata et al. teaches a fibrous hydrotalcite wherein the fibrous hydrotalcite is represented by the formula (1). See Miyata et al. at col. 4, line 62. Miyata et al. also teaches an A^{n-} (anion) in the formula (1) of CH^- , Cl^- , NO_3F^- , CO_3^{2-} , SO_4^{2-} , SiO_3^{2-} , HPO_4^{2-} , $[\text{Fe}(\text{CN})_6]^{3-}$ but fails to teach the presently claimed HSi_2O_5^- .

Although it is alleged that the claimed limitations are only optimization of the teachings of Miyata et al., Applicants traverse the allegation because the presently claimed limitation of HSi_2O_5^- and the BET specific surface area of 50 to 400 m^2/g are not specifically taught or suggested by the teachings. Nothing in Miyata et al. would suggest making either of the limitations.

Furthermore, requiring the A^{n-} (anion) to be $HSi_2O_5^-$ as an essential component and the making the BET specific surface area of 50 to 400 m^2/g such that the crystal is porous are not results effective variables for improving absorptivity resolution, water resistance and light resistance as a dye fix agent for water-color ink. See In re Antoine, 195 U.P.S.Q. 6 (C.C.P.A. 1977). The understanding that modifying the BET surface area to have a total pore volume of 0.50 to 2.00 ml/g as claimed in claim 23 would result in unexpectedly good properties as a dye fixing agent for water-color ink was unobvious at the time the invention was made.

Applicants further note that any possible admonition that it would have been "obvious to try" to vary the A^{n-} (anion) to be $HSi_2O_5^-$ as an essential component and making the BET specific surface area of 50 to 400 m^2/g is improper. This is because in some cases, what would have been "obvious to try" would have been to vary all parameters or try each of numerous choices until one possibly arrived at a successful result. Since the prior art fails to provide any indication whatsoever that the claimed limitations result in improved properties as a dye fixing agent for water-color ink, it would not have been obvious to try to make the claimed composition incorporating all the presently claimed limitations. See In re O'Farrell, U.S.P.Q.2d 1673, 1681 (Fed. Cir. 1988).

Accordingly, a *prima facie* case of obviousness has not been

established. Miyata et al. cannot be applied against the presently claimed invention and there simply is no suggestion in the prior art at the time the invention was made that the claimed limitations result in improved properties. The presently claimed invention achieves unexpected results over the cited reference.

Accordingly, Applicants respectfully submit the presently pending claims is unobvious over the cited reference and request that the Examiner reconsider and withdraw the rejections to the pending claims under 35 U.S.C. § 103.

2. Rejection of Claims 19-25 under judicially created doctrine of obviousness-type double patenting

The Office Action rejects claims 19-25 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 5,861,133 ("Okada et al"). The Office Action states:

Although the conflicting claims are not identical, they are not patentably distinct from each other because they claim common subject matter, in that the present ions can be selected from the patent claims. Choosing from a disclosure is an obvious matter of optimization; In re Boesch 205 USPQ 215.

Applicants respectfully traverse the obviousness type double patenting because independent claim 1 of Okada et al. relates to a

"chalcoalumite compound" whereas the presently claimed invention relates to a hydrotalcite compound. Both compounds are completely different from each in composition and in structure.

Rule of Law

A double patenting rejection of the obviousness-type is "analogous to [a failure to meet] the nonobviousness requirement of 35 U.S.C. 103" except that the patent principally underlying the double patenting rejection is not considered prior art. In re Braithwaite, 154 U.S.P.Q. 29 (C.C.P.A. 1967).

In determining whether a nonstatutory basis exists for a double patenting rejection, the first question to be asked is - does any **claim** in the application define an invention that is merely an obvious variation of an invention claimed in the patent? If the answer is no, then an "obviousness-type" nonstatutory double patenting rejection is not appropriate. See MPEP 804 B1(2).

The same requirements for a *prima facie* case of obviousness apply, i.e. the reference must establish: (1) some suggestion or motivation to modify the references; (2) a reasonable expectation of success; and (3) that the prior art references teach or suggest all claim limitations. Amgen, Inc. v. Chugai Pharm. Co., 18 U.S.P.Q.2d 1016, 1023 (Fed. Cir. 1991); In re Fine, 5 U.S.P.Q.2d

1596, 1598 (Fed. Cir. 1988); In re Wilson, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970).

The claimed invention is not obvious over claim 1 of Okada et al.

The chalcoalumite compound of claim 1 of Okada et al. is a natural compound having an aluminum hydroxide represented by the following formula $\text{CuAl}_4\text{SO}_4(\text{OH})_{12} \cdot 3\text{H}_2\text{O}$. See Okada et al. at col. 1, line 38. In contrast, the presently claimed hydrotalcite is a compound having magnesium hydroxide (or zinc hydroxide) as its basic components with parts thereof replaced with aluminum (Al^{3+}). The hydrotalcite compound and the chalcoalumite compound are not the same compounds and are therefore very clearly not obvious over each other.

Accordingly, Applicants respectfully submit that the presently pending claims are not obvious under the judicially created doctrine of obviousness-type double patenting over Okada et al. and request that the Examiner reconsider and withdraw the rejection.

3. Rejection of Claims 19-25 under judicially created doctrine of obviousness-type double patenting

The Office Action rejects claims 19-25 under the judicially created doctrine of obviousness-type double patenting as being

unpatentable over claims 1-39 of U.S. Patent No. 6,418,661 ("Takahashi et al. '661"). The Office Action states:

Although the conflicting claims are not identical, they are not patentably distinct from each other because they claim common subject matter as explained above.

Applicants respectfully traverse the obviousness type double patenting because claims 1-39 of Takahashi et al. '661 relate to a Mg-Al hydrotalcite compound represented by the formula (I) wherein the ratio of $\{Mg/Zn\}_{1-x}:Al_x$ of the formula (1) of Takahashi et al. '661 is outside the presently claimed range. Claims 1-39 of Takahashi et al. '661 also fails to teach the presently claimed limitation of a BET specific surface area.

Rule of Law

A double patenting rejection of the obviousness-type is "analogous to [a failure to meet] the nonobviousness requirement of 35 U.S.C. 103" except that the patent principally underlying the double patenting rejection is not considered prior art. In re Braithwaite, 154 U.S.P.Q. 29 (C.C.P.A. 1967).

In determining whether a nonstatutory basis exists for a double patenting rejection, the first question to be asked is - does any **claim** in the application define an invention that is merely an obvious variation of an invention claimed in the patent?

If the answer is no, then an "obviousness-type" nonstatutory double patenting rejection is not appropriate. See MPEP 804 B1(2).

The same requirements for a *prima facie* case of obviousness apply, i.e. the reference must establish: (1) some suggestion or motivation to modify the references; (2) a reasonable expectation of success; and (3) that the prior art references teach or suggest all claim limitations. Amgen, Inc. v. Chugai Pharm. Co., 18 U.S.P.Q.2d 1016, 1023 (Fed. Cir. 1991); In re Fine, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); In re Wilson, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970).

The claimed invention is not obvious over claims 1-39 of Takahashi et al. '661

Claims 1-39 of Takahashi et al. '661 fail to teach the presently claimed ratio of $(\text{Mg/Zn})_{1-x}\text{Al}_x$ of the formula (1) and the presently claimed limitation of a BET specific surface area.

The range of x in the hydrotalcite compound of Takahashi et al. '661 is $0 < x \leq 0.5$, whereas the range of x in the hydrotalcite compound of the present invention is $0.50 < x \leq 0.8$. These two compounds differ in an unobvious ratio of $[\text{Mg/Zn}]/\text{Al}$ over each other.

Furthermore, the claims 1-39 of Takahashi et al. '661 fail to teach the presently claimed BET specific surface area. In

particular, the hydrotalcite compound of Takahashi et al. '661 has a BET value of not more than 30 m²/g. See Takahashi et al. '661 at claim 8. In contrast, the hydrotalcite compound of the present invention has a BET-value of 50 to 400 m²/g. In other words, the compositions of Takahashi et al. '661 are not obvious over each other.

Accordingly, Applicants respectfully submit that the presently pending claims are not obvious under the judicially created doctrine of obviousness-type double patenting over claims 1-39 of Takahashi et al. '661 and request that the Examiner reconsider and withdraw the rejection.

4. Rejection of Claims 19-25 under judicially created doctrine of obviousness-type double patenting

The Office Action rejects claims 19-25 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,306,494 ("Takahashi et al. '494"). The Office Action states:

Although the conflicting claims are not identical, they are not patentably distinct from each other because they claim common subject matter as explained above.

Applicants respectfully traverse the obviousness type double patenting because independent claim 1 of Takahashi et al. '494

relates to a "chalcoalumite compound" whereas the presently claimed invention relates to a hydrotalcite compound. Both compounds are completely different from each in composition and in structure.

Rule of Law

A double patenting rejection of the obviousness-type is "analogous to [a failure to meet] the nonobviousness requirement of 35 U.S.C. 103" except that the patent principally underlying the double patenting rejection is not considered prior art. In re Braithwaite, 154 U.S.P.Q. 29 (C.C.P.A. 1967).

In determining whether a nonstatutory basis exists for a double patenting rejection, the first question to be asked is - does any **claim** in the application define an invention that is merely an obvious variation of an invention claimed in the patent? If the answer is no, then an "obviousness-type" nonstatutory double patenting rejection is not appropriate. See MPEP 804 B1(2).

The same requirements for a *prima facie* case of obviousness apply, i.e. the reference must establish: (1) some suggestion or motivation to modify the references; (2) a reasonable expectation of success; and (3) that the prior art references teach or suggest all claim limitations. Amgen, Inc. v. Chugai Pharm. Co., 18 U.S.P.Q.2d 1016, 1023 (Fed. Cir. 1991); In re Fine, 5 U.S.P.Q.2d

1596, 1598 (Fed. Cir. 1988); In re Wilson, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970).

The claimed invention is not obvious over claim 1 of Takahashi et al. '494

The chalcoalumite compound of claim 1 of Takahashi et al. '494 is a natural compound having an aluminum hydroxide represented by the formula (1) in claim 1. See Takahashi et al. '494 at col. 28, line 22. In contrast, the presently claimed hydrotalcite is a compound having magnesium hydroxide (or zinc hydroxide) as its basic components with parts thereof replaced with aluminum (Al^{3+}). The hydrotalcite compound and the chalcoalumite compound are not the same compounds and are therefore not obvious over each other.

Accordingly, Applicants respectfully submit that the presently pending claims are not obvious under the judicially created doctrine of obviousness-type double patenting over claim 1 of Takahashi et al. '494 and request that the Examiner reconsider and withdraw the rejection.

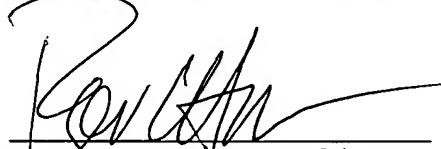
CONCLUSION

In light of the foregoing, Applicants submit that the application is now in condition for allowance. The Examiner is

therefore respectfully requested to reconsider and withdraw the rejection of the pending claims and allow the pending claims. Favorable action with an early allowance of the claims pending is earnestly solicited.

Respectfully submitted,

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Attorney Docket No. OHS-299/DIV
MAIL STOP AMENDMENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:) Group Art Unit: 1754
)
TANAKA et al.) Examiner: Stuart L. Hendrickson
)
Serial No.: 10/608,262)
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Filed: June 30, 2003)

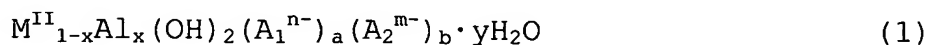
For: **DYE FIXING AGENT FOR WATER-COLOR INK, INK JET
 RECORDING MEDIUM AND POROUS HYDROTALCITE COMPOUND**

Appendix A

Please amend the claims as indicated according to 37 C.F.R.
§ 1.121 concerning a manner for making claim amendments.

Claims 1-18 (Cancelled)

19. (Currently Amended) A porous hydrotalcite compound
represented by the following formula (1):



wherein M^{II} is Mg^{2+} or/and Zn^{2+} , A_1^{n-} is a silicic acid ~~anion~~ ion
($HSi_2O_5^-$) ~~having a valence of n~~ and a sulfuric acid ion (SO_4^{2-}),
or a silicic acid ~~anion~~ ion ($HSi_2O_5^-$) ~~having a valence of n~~, A_2^{m-}
is an anion selected from the group consisting of CO_3^{2-} , NO_3^- , Cl^-
and OH^- , x and y satisfy $0.50 < x \leq 0.80$ and $0 < y < 2$, and a and

b satisfy $0.50 < na + mb \leq 0.80$, and having a BET specific surface area of 50 to 400 m²/g.

20. (Currently Amended) The porous hydrotalcite compound according to claim 19, wherein ~~the~~ A₁ⁿ⁻ is a silicic acid anion ion (HSi₂O₅⁻) and a sulfuric acid ion (SO₆²⁻) ~~having a valence of n is an anion selected from the group consisting of SiO₃²⁻, HSiO₃⁻, Si₂O₅²⁻ and HSi₂O₅⁻.~~

21. (Currently Amended) The porous hydrotalcite compound according to claim 19, wherein the silicic acid ~~anion~~ ion (HSi₂O₅⁻) and the sulfuric acid ion ~~, or the silicic acid anion (A₁ⁿ⁻)~~ accounts for 10 to 98 mol% of the total of all the anions (A₁ⁿ⁻ + A₂^{m-}).

22. (Currently Amended) The porous hydrotalcite compound according to claim 19 which has a BET specific surface area of ~~50 100~~ to ~~400 300~~ m²/g.

23. (Original) The porous hydrotalcite compound according to claim 19 which has a total pore volume (N₂ gas adsorption method) of 0.50 to 2.00 ml/g.

24. (Original) The porous hydrotalcite compound according to claim 19 which has an average pore radius (N₂ gas adsorption method) of 4 to 15 nm.

25. (Original) The porous hydrotalcite compound according to claim 19 which has an average particle diameter of 0.1 to 10 μm .

Claims 26-40 (Canceled)

41. (New) The porous hydrotalcite compound according to claim 19 which has a total pore volume (N₂ gas adsorption method) of 0.70 to 1.60 ml/g.

42. (New) The porous hydrotalcite compound according to claim 19 which has an average pore radius (N₂ gas adsorption method) of 7 to 10 nm.

43. (New) The porous hydrotalcite compound according to claim 19 which has an average particle diameter of 0.5 to 10 μm .

44. (New) Use of the hydrotalcite compound of claim 19 as a dye fixing agent contained in the water-color ink accepting layer of an ink jet recording medium.